

Master thesis for the Master of Philosophy in Environmental and  
Development Economics

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# **The Impact of Trade Liberalization on Ethiopian Export, import and GDP**

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## Preface

*From my studies, I have come to know that some developing countries have enjoyed economic growth following the adoption of trade liberalization while others seem to be hurt by free trade agreements and policy of trade liberalization. My country, Ethiopia, being one of the developing countries, has opened its borders for trade since 1992. I am motivated to do the impact of this opening of borders to trade owing to the puzzle on other developing countries.*

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## Abstract

Following the 1970's and 1980's economic and debt crisis in the developing countries, major aid donors like World Bank and IMF change their aid policies to these countries. They recommend a policy package called Structural Adjustment program (SAP) which included reduction of trade barriers and opening of international trade to foreign competition, and amongst other long-term growth and development strategies. Ethiopia adopts SAP in 1992 as recommend by World Bank. Trade liberalization is one of policies in SAP, which the country agrees to implement with the aim of expanding export, import and GDP of the country. The study has attempted to find out the impact of trade liberalization has brought in to the performance of ,export, import and GDP. Instrumental Variable (IV) and two stage least square (2SLS) estimation methods are employed to estimate the impact of trade liberalization on the above variables using data from 1960-2006. The study finds that even though trade liberalization has positive impact on both export and import of the country, its impact is more to import than to exports making the trade deficit of the country worse than before. This is consistent with descriptive analysis that the deficit of the country has grown from 7.4% in the pre-liberalization periods to 19.34% post liberalization periods. However, the study finds out no direct significant impact of trade liberalization on Ethiopian GDP growth.

## 1. Introduction

Countries in both the developed and developing world have been undertaking the policy of trade liberalization to promote their economic growth through the dynamic and static benefits of trade. That is, trade increases the flow of knowledge and investment and makes efficient allocation of resource by increasing competition in the domestic market. Export and imports are highly affected by restrictive trade policy that discourages exporters and importers through high export tax and import tariffs. However, the pre assumption of applying trade liberalization is that it will make more of both export and imports.

According to A.P. Thirwall (2004), the liberalization of trade has led to massive expansion in the growth of world trade relative to world output. While world output has expanded fivefold, the volume of world trade has grown 16 times at an average compound rate of just over seven percent per annum. In some individual countries, notably in south East Asian countries, the growth of export has exceeded 10 percent per annum. Exports have tended to grow faster in countries with more liberal trade regimes, and these countries have experienced faster growth of GDP.

Following the economic and debt crisis of the developing world in the 1970's and 1980's, the major donors, World Bank and IMF made major change in aid policy to these countries. They move towards more conditional assistance and recommend a reform called Structural Adjustment program (SAP) which included reduction of trade barriers and opening of international trade to foreign competition, and amongst other long-term growth and development strategies

According to World Bank (2002), a reduction in world barrier to trade could accelerate growth, provide stimulus to new forms of productivity –enhancing specialization, and lead to a more rapid job creation and poverty reduction around the world.

However, it has been argued that countries in both developing and developed world are not equally benefited from trade. This depends on the production and demand characteristics of the goods that a country produces and trades, the domestic economic policies pursued and the trading regime it adopts. For example taking developing countries as a whole, the volume of exports has grown by 5% while that of developed countries has grown by 8% per annum because developing countries still largely produce and export primary commodities and low value added manufactured goods with relatively low-income elasticity of demand in world

markets. The discrepancy in rates of growth of exports has been even wider in value terms because the term of trade of developing countries has deteriorated vis-avis developed countries causing developing countries share of the total value of world trade to have fallen from 30% in 1965 to 20% in 2000. (S. Paulino et al, 2004)

Mark and Baker (2004) argued that, even if there are reasons for believing that expanded trade can help to promote growth in developing countries, it is unlikely that trade liberalization by itself will qualitatively improve the plight of people in developing world. According to these authors the major success stories of East Asian countries and recently experiencing accelerated growth rates such as China and India have not followed simple path trade liberalization. In all of these countries, the government has played an important role in guiding the economy. This guidance has included export subsidies and protection for favored industries and restrictions on capital flow. The leading proponents of trade liberalization currently promoted by World Bank and others generally oppose all these policies.

Ethiopia adopted the Structural Adjustment Program (SAP) of World Bank in 1992. Before this period, different trade and economic policies were implemented by the different governments that ruled the country. The trade policy adopted in the pre-1992 period (both imperial and military government of Ethiopia) was characterized by strongly inward-oriented development strategy that had negative impact on export directly or indirectly through profitability and competitiveness. The current government came to power in 1992 and undertakes trade policy reform as recommended by World Bank and has embarked comprehensive trade reform on both export and import side.

The motivation for this study comes from the ongoing debate with regard to the impact of trade liberalization on the economic performance of developing countries. Moreover, I am motivated to do this research as there has not been a research on the impact of trade liberalization on exports and imports and GDP on Ethiopian case, even though a lot has been done on other developing countries.

The research questions under this study are

- a. Are the reforms on the export sector post -1992 encourage and made exporters to export more?
- b. What happens to the amount of imported goods following the adoption of trade liberalization?



- c. Is the effect of trade liberalization more to exports or imports?
- d. Does trade liberalization have significant impact on Ethiopian GDP?

To answer the above research questions, simultaneous equation model is derived from the demand functions of export and import (specified by A.p.Thrilwall, 2004) and from standard production function (specified by P.Santos, 2005). The model is estimated using Instrumental variable (IV) and two stage least square (2SLS) estimation methods using STATA and GIVWIN softwares. Moreover, Error correction models is specified and estimated to see the short run impact of trade liberalization on export, import and GDP.

The study is organized to have five sections. The first section deals with the introductory part of the study. The second section is about the review of theoretical and empirical literatures. This section provides some measures and definitions of trade liberalization by some authors. The third section deals with the descriptive analysis of the performance of export, import and GDP before and after 1992. The fourth section is the econometric counterpart of the third section.

Lastly, the study ends its fifth section by providing conclusions from the findings of the descriptive and econometrics analysis.

## **2. Review of the Literature**

### **2.1. Static and dynamic gains from trade**

Before exploring and describing the static and dynamic gains of trade, it is important to view briefly the historical background of trade and its relation to the static and dynamic gains of trade.

Historically, the doctrine of mercantilism that was prevailing in the 17<sup>th</sup> and 18<sup>th</sup> centuries, with the view of strong nationalism and central economic planning, consider foreign trade with suspicion. According to this theory, the most importance means in which a country could grow was by getting precious metals, especially gold. There fore, the reason why they considered foreign trade with uncertainty was that they consider imports as means of depriving the nations' source of richness, i.e. precious metals and exports were favoured as long as they brought these precious metals. For this reason, they favoured regulated and restricted trade (Redonstein, 1994).

However, the importance of trade as a means of increasing social wellbeing and economic development has been realized since the beginning of classical trade theory. It has been said that Adam Smith(1776) who profound the first classical trade theory of absolute advantage ,emphasized the importance of trade as means of surplus production by saving the amount of labour that was used to produce a good in which the country has absolute disadvantage. Smith's arguments of absolute advantage were based on free trade as best policy for trade between nations.

Smith's absolute advantage does not take in to account the gain from trade between countries if one of the countries has absolute advantage over all lines of production. David Ricardo (1817), in his theory of comparative advantage, came with relative difference in technology of production as a rationale for trade among countries. These relative technological differences are reflected in relative difference in the productivity of labor (or difference in the opportunity of cost of labor<sup>1</sup>).In this case, we compare their relative labor productivity or opportunity cost

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<sup>1</sup> Opportunity cost is measured by the marginal rate of transformation between one good and anther, as given by the slope of production possibility curve, that is by how much one good has to be scarified in order to produce anther.

to determine which country has comparative advantage on the goods to be produced and trade. As long as the countries' opportunity cost for one good differ, one country has comparative advantage in the production of one of the goods, while the other country has comparative advantage in the other product. Countries can reallocate their labor to the line where their comparative advantage lies, export this good and import the good with comparative disadvantage. In such a case, both countries will gain from trade, regardless of the fact that one of the countries has an absolute disadvantage in all line of production (Rodenstein, 1994).

As an extension to Ricardo model that emphasized on one factor of production (labour), the specific factor model, pioneered by R.W.Jones (1971), emerged as a three factor, two-good and two country models. The essence of this model is that one factor (labor) is assumed mobile between two industries within each country, with the other two factors specific to the industry in which they are employed. A country with more relative supply in one of two specific factors will have higher labor productivity. Thus, the comparative advantage of this country lies in the goods intensive in that specific factor. Both countries' will gain by exporting goods in their comparative advantage and import the other.

Another modification to the theory of comparative advantage in traditional economics is that difference in endowment of resources among countries with same technology and taste determines trade. This is called the Heckscher-Ohlin (HO) Model. We can consider HO model as a long-term version of the specific factor model in which all factors are mobile in the sectors wherein they are employed, but immobile between countries. According to HO model, countries' will export goods that are intensive in their relative abundant resources and import goods intensive in their relative scarce factors. Like the specific factor model, a country's comparative advantage lies in the goods intensive in the abundant factor.

According to A.P. Thirlwall (2000), the static gains from trade are related to the theory of comparative advantage, i.e., the static gain from trade springs from trading either due to difference in technology of production or due to difference in resource endowment. It is worth quoting Thirlwall's description of the static gain:

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*“the static gains from trade are measured by the resource gains to be obtained by exporting to obtain imports more cheaply in terms of resource given up, compared to producing the goods oneself or, to put it in another words, the static gains from trade are measured by the excess cost of import substitution; by what is saved by not producing the imported good domestically. The resource gains can then be used in variety of ways including increasing domestic consumption of both goods” (A.P.Thirwall, 2000, pp 8)*

This static gain from trade can be verified mathematically<sup>2</sup> in terms of the difference in consumption bundles with and without trade. The verification is based on the assumptions of profit maximizing (PM) firm and utility maximizing consumer faced with budget constraint (BC). Moreover let:

$X$  = Production set,  $x^A$  = Production vector under autarky,  $x^T$  = Production vector under Trade  
 $c^A$  = Consumption vector under autarky,  $c^T$  = Consumption vector under Trade,  $Px$  = total profit  
 $P$  = Vector of prices,  $M = c - x$  = import vector

From autarky equilibrium we have

$$P^A x^A \geq P^A x \quad (1) \text{ from PM for any } x \in X$$

$$P^A c^A = P^A x^A \quad (2) \text{ from Budget constraint (BC)}$$

Similarly from trading equilibrium we have:

$$P^T x^T \geq P^T x \quad (3) \text{ from PM for any } x \in X$$

$$P^T c^T \geq P^T x^T \quad (4) \text{ From (BC)}$$

From (2)

$$\Rightarrow c^A = x^A \quad (5)$$

From (3), (4), and (5)

$$P^T c^T = P^T x^T \geq P^T x^A = P^T c^A$$

$$\Rightarrow P^T c^T \geq P^T c^A$$

$$\Rightarrow c^T \geq c^A$$

The above mathematical verification shows indeed trade provides larger set of consumption bundles than autarky. Higher consumption set implies higher social indifference curve and hence increased welfare.

However, the above gain does not show whether there is an equitable or equal distribution of the gain from trade. Since there are changes in product prices as a result of this specialization

<sup>2</sup> Taken from lecture note of H. K.Ulltveit-Moe, International Trade, University of Oslo.

there are some group of people who gain from trade and some losers. Workers employed in the line of production in which the country specialises and export will be the beneficiaries and those on the import side will be the losers. This is what we call it the Stolper- Samuelsson (1941) theorem. This will be clearer if it is augmented by some mathematical articulations from Feenistra (2004).

Assume that we have two goods and two factors, good 1 and good 2 , labour and capital respectively ,with good 1 labour intensive and good 2 is capital intensive. Moreover, let us assume that we have two countries where country 1 is labour abundant and country 2 is capital abundant country.

The Heckscher- Ohlin (HO) model predicts country one will export good one and import good two. Thus, in country1 the price of good1 ( $P_1$ ) increases and price of good2 ( $P_2$ ) decreases. Assume the increase in price of good one is greater than the decrease in the price of good 2. We will see in the following computations the impact of change in product prices on the real returns of labour and capital engaged in the production of good1 and good2 in country1.

*Let  $a_{iL}$  = Labour needed for one unit of product i*

*$a_{iK}$  =Capital needed for one unit of product i*

*$w$  = wage rate and  $r$  = return to capital*

*$c(w, r)$  =unit cost of production =  $a_{iL}w + a_{iK}r$*

Assuming that these two goods are produced, no factor price reversal and perfect competition, the zero profit condition will determine factor price.

The zero profit condition can be written as:

$$\begin{aligned} P_1 &= c_1(w, r) \\ P_2 &= c_2(w, r) \\ \Rightarrow P_i &= a_{iL}w + a_{iK}r \end{aligned} \tag{6}$$

When product price changes, how will factor change? This can be answered by performing comparative statistics on (6).Totally differentiating this equation:

$$dP_i = a_{iL}dw + a_{iK}dr \Rightarrow \frac{dP_i}{P_i} = \frac{wa_{iL}}{c_i} \frac{dw}{w} + \frac{ra_{iK}}{c_i} \frac{dr}{r} \tag{7}$$

The second equation is obtained by multiplying and dividing like terms.

In order to express the variables interims of percentage changes such as  $d \ln w = dw/w$ , as well as cost shares. Let  $\theta_{iL} = wa_{iL}/c_i$  denote the cost share of labour in industry i, while  $\theta_{iK} = ra_{iK}/c_i$  denotes the cost share of capital. The fact that  $c = a_{iL}w + a_{iK}r$  ensures that the shares sum to unity,  $\theta_{iL} + \theta_{iK} = 1$ . In addition denote the percentage changes by  $dw/w = \hat{w}$  and  $dr/r = \hat{r}$ . Then (7) can be rewritten as

$$\hat{P}_i = \theta_{iL} \hat{w} + \theta_{iK} \hat{r} \quad (8)$$

Expressing the equation using these cost shares and percentage changes follows Jones (1965) and is referred to as the “Jones algebra”. This system of equation can be written in matrix form and solved as:

$$\begin{bmatrix} \hat{P}_1 \\ \hat{P}_2 \end{bmatrix} = \begin{bmatrix} \theta_{1L} & \theta_{1K} \\ \theta_{2L} & \theta_{2K} \end{bmatrix} \begin{bmatrix} \hat{w} \\ \hat{r} \end{bmatrix} \Rightarrow \begin{bmatrix} \hat{w} \\ \hat{r} \end{bmatrix} = \frac{1}{|\theta|} \begin{bmatrix} \theta_{2K} & -\theta_{1K} \\ -\theta_{2L} & \theta_{1L} \end{bmatrix} \begin{bmatrix} \hat{P}_1 \\ \hat{P}_2 \end{bmatrix} \quad (9)$$

Where  $|\theta|$  denotes the determinant of the two-by-two matrix on the left. This determinant can be expressed as

$$\begin{aligned} |\theta| &= \theta_{1L}\theta_{2K} - \theta_{1K}\theta_{2L} \\ &= \theta_{1L}(1 - \theta_{2L}) - (1 - \theta_{1L})\theta_{2L} \\ &= \theta_{1L} - \theta_{2L} = \theta_{2K} - \theta_{1K} \end{aligned} \quad (10)$$

Where we have repeatedly made use of the fact that  $\theta_{iL} + \theta_{iK} = 1$ . We have assumed that good one is labor intensive, thus its cost share of labor exceeds labor cost share of good 2,  $\theta_{1L} - \theta_{2L} > 0$ , so that  $|\theta| > 0$ . further more we have assumed that  $\hat{P} = \hat{P}_1 - \hat{P}_2 > 0$ . Thus we can show the effect of change in goods prices on factor prices using (9) and (10) as

$$\hat{w} = \frac{\theta_{2K}\hat{P}_1 - \theta_{1K}\hat{P}_2}{|\theta|} = \frac{(\theta_{2K} - \theta_{1K})\hat{P}_1 + \theta_{1K}(\hat{P}_1 - \hat{P}_2)}{(\theta_{2K} - \theta_{1K})} > \hat{P}_1 \quad (11)$$

Since  $\hat{P}_1 - \hat{P}_2 > 0$  and

$$\hat{r} = \frac{\theta_{1L}\hat{P}_2 - \theta_{2L}\hat{P}_1}{|\theta|} = \frac{(\theta_{1L} - \theta_{2L})\hat{P}_2 - \theta_{1K}(\hat{P}_1 - \hat{P}_2)}{(\theta_{1L} - \theta_{2L})} < \hat{P}_2 \quad (12)$$

Since

$$\hat{P}_1 - \hat{P}_2 > 0$$

From (11) and (12)

$$\hat{w} > \hat{p}_1 > \hat{p}_2 > \hat{r}. \quad (13)$$

This means that workers can afford to buy more of good 1 ( $w/p_1$  has gone up) as well as more of good 2 ( $w/p_2$  has gone up) which implies the real wage has increased. Looking at the rental on capital from (12) and (13), we see that rental  $r$  changes by less than the price of good 2. This implies that owners of capital can afford less of both good one and good two. Thus, opening border for trade made some better off while others worse off.

Moreover, the distribution of the gain from trade is not equitable among developed and countries. Thirlwall (2000) argued that developing countries are not equally beneficiary from free trade as developed countries. This is because the goods these countries are 'forced' to specialize in under auspices of free trade have characteristics, which may cause both the terms of trade to deteriorate and the unemployment of resources. Majority of these countries specialize in primary commodities that have both a low price and income elasticity of demand. This means when supply increases, prices can drop dramatically and demand grow only slowly with income growth. Moreover, these products are land based activities and subject to diminishing returns, and there is limit to employment in diminishing returns activities set by the point where the marginal product of labor falls to the minimum subsistence wage. However, no such problem arises in manufacturing activities, where no fixed factor of production is involved, and production may be subject to increasing returns. For countries specializing in diminishing returns activities, the real resource gain from specialization may be offset by the real income losses from unemployment. In this case, Thirlwall (2000) concludes that free trade and complete specialization would not be optimal for these groups of countries.

The above traditional trade theories could explain the trade between developing and developed countries. Nevertheless, It ignores the trade between countries with relatively same endowment of resources and same technology and tastes. The New trade theory has emerged to provide an explanation for this "unexplained" trade using the concepts of scale economics, product differentiation and home market effect. P.Krugman (1980) argued that when countries are producing differentiated products with increasing return to scale, increasing returns to scale produce trade and gain from trade even if the countries have identical tastes, technology and factor endowment. Moreover, he provide a model and explanation to the impact of domestic market size on the flow of goods between countries with identical tastes, technology and factor endowment. According to him, if we have monopolistically competitive market

structure with firms producing differentiated products ,increasing return to scale, and transport cost, a country with large domestic market size will be net exporter of goods in which it has large domestic demand. This large domestic market also attracts investors in order to save transport cost and exploits economics of scale.

The dynamic gains from trade are related to the new trade theory. They stem from having increasing returns in production, market expansion, and acquisition of new knowledge, new ideas and dissemination of technical knowledge. According to Thirwall (2000), export markets widen the total market for country producers. If production is subject to increasing returns, export growth becomes a continual source of productivity growth. For small country with no trade, there is very little scope for large scale investment in advanced capital equipment; specialization is limited by the extent of the market. However, if a poor small country can trade, there is some prospect of industrialization and dispensing with traditional method of production.

## **2.2. Measures and Definitions of Trade Liberalization**

There is no agreement among scholars as to what exactly trade liberalization is. Accordingly, scholars have provided different measures and definitions of trade liberalization since then. In more general terms, we can relate trade liberalization with making borders of nations more open to trade and giving equal incentives to both export and import competing sectors. A more open and neutral trade regime can be achieved by reducing import barriers and lifting export tax or subsidy. Moreover, an increase in the liberty of trade is associated with increase in the importance of trade in the economy.

In the following sub sections, we will discuss some of the measures and the associated definitions of trade liberalization provided from 1960's to 2000's.

### **2.2.1. Effective Rate of Protection ( 1960's)**

According to Edwards (1993), the concept of Effective Rate of Protection (ERP), pioneered by W.Max Corden (1966), Balassa (1965), and Harry Johnson (1965), tries to capture in a single indicator the rate of protection granted to value added in a given industry. The rate of effective protection to industry  $j$  is defined as

$$\tau_j = \frac{(VA_j - VA_j^*)}{VA_j^*}$$



Where VA= domestic value added

VA\* = “World” value added, and is taken to be the proxy for most efficient way of producing j.

Assuming a linear relation between inputs and out puts –where  $a_{ij}$  denotes an input-output coefficient – the ERP for industry j can be rewritten as

$$\tau_j = \frac{(t_j - \sum_i a_{ij} t_i)}{(1 - \sum_i a_{ij})} \quad (14)$$

Where  $t_i$  is the tariff on inputs  $I$  and  $t_j$  the nominal tariff on final good.

From equation (14) we can drive important properties of the tariff in relation to inputs and /or intermediate inputs and final goods. As long as tariff on final goods is greater than tariffs on intermediate inputs (or inputs), i.e.,  $t_j > \sum_i a_{ij} t_i$ , activities with low value added ( e.g. a high  $\sum_i a_{ij}$  ) will tend to have higher “effective” protection than what the nominal tariff would indicate. More over, unlike the nominal tariff, the effective rate of protection can be negative if  $t_j < \sum_i a_{ij} t_i$ . This would be the case if the intermediate inputs are subject to higher tariff than the tariff imposed on final goods.

Little et al (1970) and Balassa (1971) are the first to use ERP on their investigation of trade orientation and economic performance in developing countries. However, the use of ERP by such studies was criticized for two reasons. First, the evolution of ERP is not calculated in any of countries studied. Second, the studies resulted in important difference in ERP calculations for the same country in the same year. More over, such calculations do not show how specific countries evolved from one trade regime to another. Such a measure is concentrated on the features of import-substitution policies, with out comparing with alternative policies of foreign trade orientation (Paulino et al, 2005).

### 2.2.2 Effective Exchange rate and Bias to Export (1970's)

Kruger (1978) and Bhagwati (1978), sponsored by the US National Bureau of Economic Research (NBER), provide the first organized and systematized study on trade regimes and trade orientation. They classified countries' trade regimes as export promotion, import substitution and neutral trade policy regimes and orientations. Such classification was done by using a measure they called it "bias against export". This measure indicates how much the countries structure of protection and incentives are biased against exports relative to the incentives and protections given to import. Liberalization and bias reduction were defined using concepts of Effective Exchange rate (EER) and quantitative restrictions (QR). The degree of bias (B) of trade regime at time t is defined as:

$$B_t = \frac{EER_M}{EER_X} = \frac{E_M(1+t+n+PR)}{E_X(1+s+r)} \quad (15)$$

That is, the ratio of exchange rate effectively paid by importers ( $EER_M$ ) to the exchange rate effectively paid by exporters ( $EER_X$ ).

The effective exchange rate for imports ( $E_M(1+t+n+PR)$ ) is defined as the nominal exchange rate applied to imports  $E_m$ , corrected by the average effective import tariff (t), other import charges (n), and the premium associated with the existence of quantitative restrictions such as import license (PR). The effective exchange rate for exports  $E_X(1+s+r)$  is calculated as the nominal exchange rate for exports ( $E_X$ ), corrected by export subsidies (s) and other incentives to export (r), including export encouragement schemes( see Edwards 1993)

Depending on the value of B in equation (15), which takes in to account incentives and protection for both export and import, we can identify the trade regime of a given country.

When this ratio is smaller than one, the country might be defined as following as export promotion trade regime Unitary value of B ,on the other hand indicates neutral trade regime. Lastly, if it is greater than one, then the trade regime of the country could be regarded as import substitution policy.

After such classification of the trade regimes, Kruger and Bhagwati provide definition of trade liberalization intremis of this bias against export. Edward (1993) put their definition as follows:

*“...Kruger- Bhagwati defined trade liberalization as any policy that reduces the degree of anti-export bias, where the empirical emphasis was focused on reductions in the import licenses premium (PR) as a fundamental step in the liberalization reform. The most important property of such a measure is that it does not require zero (even low) import tariffs. Indeed, they stated that it is possible to have a “liberalized “economy with high tariff rates (Edward, 1993, pp1364)*

In my view, the above trade liberalization definition of Kruger and Bhagwati seems to have some properties of both export promotion strategy and import substitution strategy for two reasons. First, they use the term reduction in anti export bias, which implies giving more incentive to export and this is related to export promotion strategy. Second, the argument “it is possible to have liberalized economy with high tariff rates”, indicates a measure to be taken to encourage import substitution strategy. Accordingly, Kruger- Bhagwati definition of trade liberalization lacks clarity and appears to contradict with the conventional understanding of trade liberalization as making the borders more open to trade.

More over, such definition and measure was also criticized by Balassa (1982).He argued that such classification ignored the protective effect of tariffs, that is in addition to quantitative restrictions ,tariffs usually introduces a strong bias against exports. He proposed a four –way classification of trade regimes as an alternative. The classification ranged from outward orientation (where the export bias stemming both from quantitative restrictions and from tariff has been implemented), to inward orientation (where the anti-export bias is highest).( Santos et al ,2005)

### **2.2.3. World Bank's Trade liberalization Index and Definition(1990's)**

Project of World Bank, directed by Michael et al (1991), tried to provide an alternative definition and measure of trade liberalization due to the difficulties faced by previous studies in classifying countries in different trade regimes, including the problems with measuring the importance of quantitative restrictions. They decided to tackle this problem by asking individual country authors to construct an index of trade liberalization. This index could take values from 1, in the case of highly regulated and controlled foreign trade, to 20 when foreign trade was fully liberalize and had to be calculated for as many years as possible between 1948 and 1985. They have computed such indexes for 19 countries, however, only one of the countries (i.e. Chile in the late 1970's) attained the value of 20.

Michael et al (1991) identified periods of considerable change in trade policy after analysing the evolution of this trade liberalization index through time together with other variables. They defined trade liberalization as

***“..Any change which leads a country’s trade system to wards neutrality in the sense of bringing its economy closer to the situation which would prevail if there were no government interference.” (Michealy,et al,1991 cited in Edwards,1993 pp.1367)***

Using this definition, 36 liberalization attempts were identified for the 19 countries in the study. Of these, 19 were considered to be strong liberalization and 17 were classified as weak efforts. Only 15 of the 36 cases were sustained, in the sense that the reform had not been reversed after a few years (Edwards, 1993).

Although Michael et al made significant effort in improving the definition and measure of trade liberalization, they are criticized on the fact that, their liberalization index is largely subjective, reflecting the personal perception of the individual country authors and due to this subjectivity it is not comparable a cross countries. In fact ,the directors of this project were aware of this problem and warned the readers that “the index of liberalization is inherently not comparable across countries; its assigned level in any year is meaning full only in the context of changes over time in that country”.(Michealy,et al,1991 cited in Edwards,1993 pp.1368)

Consequently, the indices could not be used as indicators of trade orientation in their cross country econometric analysis; instead, they had to rely on dummy variables to classify different episodes.

#### **2.2.4 The Sachs and Warner Criteria(1995)**

Following the criticism of the above measures, Saches and Warner (SW) (1995) come with a new measure of economic openness using information about numerous aspects trade policy and other country specific factors. They use dummy variable which corresponds to a decade in which countries start to liberalize their trade. They classify a country as closed if it displayed at least one of the following characteristics ( or open if none of them is satisfied)

1. Average tariff rates(TR) of 40% or more
2. Nontariff barriers (NTR) covering 40% or more of trade
3. A black market exchange rate(BMR) that is depreciated by 20% or more relative to the official exchange rate,
4. A state monopoly on major exports (SM)
5. A socialist economic system(SES)

Base on these criteria, they use the dummy variables which pertains to the 1970's and 1980's. The dates of liberalization were obtained from a comprehensive survey's of country case studies of liberalizations. Accordingly, of the 111 countries they took as a sample, they found 78 as closed and 33 as open in the period of 1979-1989.

**Rodriguez and Roderik(2000)** criticized SW dummies for the 1970-1989 period on the fact that their classification of countries as open and closed during these periods were mostly based on the black market premium and the export market criteria. Hence many of African countries were classified as closed based on these two criteria alone which represents a bias on their classification.

**Wacziarg and Welch (2003){WW}** used the same methodology as SW above criteria with different representation of the dummy using most recent data. They argued that decade dummies can only provide a rough characterization of a country's outward orientation, especially in the decade where many countries were actively engaged in liberalizations. A preferable approach, according to them, is to rely on liberalization dates. Which avoids the inherent SW classification methodology isolating only those countries that were open at the beginning of a period. Of the 111 counties SW classified, WW found 32 were closed and 79 were open in the period of 1990-1999.

These are some of the literatures that provide the alternative measures and definitions of trade regimes and liberalizations. These literatures have not been able to provide with precise definitions and measures of trade liberalization. We end this issue with Cooper(1987) view of trade liberalization. According to him ;it is necessary to distinguish between different types of liberalization to make clear that liberalization can be viewed as a process rather than as a state and to disassociate liberalization from *laissez-fair*.

### **2.3. Pro and Against Trade Liberalization Arguments**

As there are no consensuses to the measures and definitions of trade liberalization, there are also pro and counter arguments to the importance of trade liberalization as a policy choice of a country. We will see first theoretical arguments provided by proponents and opponents of this policy when applied to a given country followed by the arguments when it is applied to the developing world.

According to **R.A.Rogowsky et al (2001)**, proponents argue that as market open and cross-border trade increases, increased competition from outside economy forces firms to be more efficient, using natural and human resources more efficiently and productively. Selling in to a larger market is said to permit firms to reduce costs by taking advantage of scale economies. They can reach out to a broader base of competitive input suppliers and have a broader field for strategic alliance. Technology will be more quickly extensively diffused, increasing productivity, competitiveness and national wealth. Investment is likely to follow to its most productive use rather than being diverted by border barriers, increasing the dynamic gains from economic growth.

From empirical point of view, **Krugman and Obstfeld (2006)** suggest that when Chile abandoned the strategy of import substitution trade policy and adopt free trade policy, its economy began to grow faster than before, its export become much diversified and it is now a country with stable economic growth. Similarly, they put forward the recent success of the Chinese economy as a result of opening its borders to trade in 1978. Since this year, the Chinese economy has reported growth rates of 10 percent per year.

However, R.A.Rogowsky et. al. (2001) also provide arguments from opponents to the importance of trade liberalization. Opponents of trade liberalization argue that even if it is true that trade is an engine of growth, an increase in a country's import puts competitive pressure on domestic producers. Such competitive pressures have required greater efficiencies and streamlining of domestic production, which can reduce employment domestically. The loss of market share to imports, factory reallocations to take advantage of lower wages overseas, and more efficient automated production will reduce domestic jobs, particularly in low skilled workers. Inturn, this reduction in less skilled jobs generated down ward pressure on wages of less skilled workers for a domestic workers.(they use empirical example of the free trade agreements among US, Canada and Mexico, which is called NAFTA).This plays as a major factor in contributing to increase income inequality in the countries making their border open to imports . Moreover, the greater inflow of goods produced in these countries with less

stringent safety standards will exceed the country's capacities to police food and product safety, which endangers health and safety in the country's market place.

Usually we hear from political leaders and international financial institutions that developed countries have to open their markets to help the developing countries grow and develop. However, some argue that the gains from increased access to rich countries are lower than the costs (losses) they incur from opening their market. For instance, M.Weisbrot et al (2002) argued that the removal of all rich countries' barrier to merchandize exports of developing countries would result in very little additional income for the exporting countries. According to World Bank's estimate<sup>3</sup>, when such changes were fully implemented by 2015, they would add 2 percent to the GDP of low- and middle –income countries.

More over M.Weisbrot et al (2002) conducted a study using a computable general equilibrium (CGE) simulation method on the relative impact of trade liberalization for developing countries. In contrast to the standard models of free trade, which reveals gain for developing countries, their study implies developing countries incur substantial problems from reducing their trade barriers. They argued that in many developing countries, tariff revenue accounts for 10-20 percent of government revenue, and in some cases considerably more. If tariffs are reduced or eliminated, these countries will have to impose large increase in other taxes in order to keep their budgets in line. According to this study, the distortion effect of these tax increases, as well as the costs and problems associated with collecting taxes from other sources, are generally ignored in economic models that project the gains from eliminating trade barriers. Moreover, they claimed that the removal of trade barriers is also likely to lead disruptions in agriculture, where lager portion of population in these countries is tied to this sector. If the barriers to agricultural imports are removed too quickly, it can lead to large-scale displacement of the rural population. Standard economic models implicitly assume that these people are re-employed in other sectors of the economy, but rapid import liberalization can lead to substantial unemployment and underemployment, as well as dangerous levels of social and economical instability.

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<sup>3</sup> Cited in M.Weisbrot et al (2002)

## **2.4. Empirics**

A large number of researchers ranging from cross country to country specific have studied the effect of trade liberalization on export, import and GDP growth. The results of these studies have broadly classified economists into those that support trade liberalization has positive impact on the above variables and those that doubt the existence of such relationship. Moreover, the results of these findings depend on the methodology they use for analysis. Some of the researches are based on panel data and time series econometrics techniques while others use static and dynamic Computable General Equilibrium (CGE) models. Despite the existence of such studies on a large number of countries, I have not found any published material for Ethiopia assessing the impact of trade liberalization on the variables mentioned above. We will see what the studies on other countries reveal the effect on import, export and GDP and welfare based on the above methodologies.

Even though most of the studies reveal positive impact of trade liberalization on export, import of both developing and developed countries, the impact on GDP growth is mixed. Moreover, the degree of increase in export, import following the elimination of domestic subsidies and border barriers is different for different countries.

**K. Anderson and W. Martin (2005)**, under World Bank project, studied the possible impact of the Doha free trade agreement of WTO on both developing and developed countries using World Bank's LINKAGE model. They found out that developing countries would enjoy 45 percent of the global gain from complete liberalization of all merchandise trade, well above their share of global GDP. Their welfare would increase by 1.2 percent, compared with an increase of just 0.6 percent for developed countries. The developing countries' higher share is partly because they have relatively high tariffs themselves (so they would reap substantial efficiency gains from reforming their own protection), and partly because their exports are more concentrated in farm and textile products whose tariffs in developed country markets are exceptionally high.

However, **A. Bouët et al (2005)** criticize the above optimistic projection of World Bank's estimate of effect of the Doha round for developing countries on the fact that they do not distinguish between the various groups of developing countries (DCs). They argued that general conclusions about DCs as a whole could be misleading, and the impact of the Doha Round on these countries is likely to be uneven. Moreover, they argued that with the ending of export subsidies and a decrease in tariffs and production-enhancing subsidies, world



agricultural prices are likely to go up. Higher prices and better access to agricultural markets in developed countries should benefit DCs, whose comparative advantages often lie in agriculture. However, not all DCs are net exporters of agricultural products. Not all net food-importing countries have the capacity to increase significantly their production, if the unfair competition and subsidies be eliminated in OECD countries. In such cases, trade liberalisation will mainly increase the food import bill. A multilateral agreement on agriculture will also have contrasted effects because some DCs export products subject to a high level of tariff peaks in OECD countries or in India and China (sugar, beef, cotton, groundnuts). Other DCs export products whose markets are much less distorted (coffee, cocoa, fish) and will gain less. Their simulation result suggests that the Doha agreement will result in a decrease in export of some products for US (cotton) and EU (sugar) after domestic support or export subsidies are cut. However, it is offset by an increase in the exports of some other products due to improved market access in third countries. The decrease in tariffs results in a significant increase in exports of Cairns Group countries and China. Mediterranean countries' exports of agricultural products also increase in spite of the erosion of their (very limited) preferential access to the EU (note, however, that they experience a fall in exports of non-agricultural products such as garments). Sub-Saharan African countries experience a smaller increase in exports than most other developing countries. This results mainly from the erosion of preferences on the EU's market. In general, exports of the poorest countries (sub-Saharan Africa and South Asia, which includes most LDCs, plus India) increase significantly less than the average exports of the rest of the world.

Time series and panel data regression results on the impact of trade liberalization on GDP for developing also results in different outcomes.

**Wacziarg and Welch (2003)** made cross –country study using panel data regression method on the impact of trade liberalization on GDP growth and investment for the period of 1950-1998. They use liberalization date dummy variable as measure of trade liberalization. Their regression result indicates that countries that have liberalized their trade regimes have experienced, on average, increase in their annual growth rate of approximately 1.5 percentage points compared to pre liberalization times. The post-liberalization increase in investment was between 1.5 and 2 percentage points, confirming their finding of trade liberalization works to foster GDP growth through its effect on physical accumulation of capital.

However, **P.P. Lopez(2004)** studied the impact of trade liberalization on export, import and GDP growth of Mexico using Autoregressive Distributed Lag (ADL) and Error Correction regression methods. His results suggest that the North American free trade agreement results

in positive impact on export and import. However, the result for GDP growth is not positive. He argued that this is because of the upward shift in the income elasticity of demand for imports and insufficiency increase in the rate of growth of exports. He concludes that the recent slow down of Mexico's economy is partly as a result of the free trade agreement.

However, Edwards (1995) evaluates the relation between openness and growth taking nine different indicators using Weighted Least Square (WLS) regression of TFP growth. He found that six of the nine indicators are significant, and all but one has the expected sign. He repeated the examination using instrumental WLS and found five significant and all having the correct sign. Thus, his results suggest that there is a significant positive relationship between trade openness and productivity growth. However, he is criticized by Santos et al (2004) that the "robustness" of his econometric analysis could be affected by anomalies and subjectivity bias.

Micro simulation based on country specific and cross-country studies even do not find conclusive evidence. For instance, Khondker (1996) develops competitive and non-competitive variants of static CGE models and examine the impact of tariff liberalization under different policy scenarios for Bangladesh. The study points out that trade liberalization has different impacts on different sectors in the economy and the outcomes of trade liberalization vary with the model structure; whether the model is competitive or non-competitive. The study finds that in competitive and constant returns to scale model variant, resources move from the heavily protected sectors to the less protected sectors as a result of tariff liberalization. In contrast, the heavily protected manufacturing sectors turn out to be the main beneficiary of liberalization when imperfect competition is introduced. Expansion of manufacturing output appears to come out from the pro-competitive effects of tariff liberalization

Moreover, the success of the East Asian countries in terms of economic growth following an outward oriented trade policy has questioned empirical researches that claim either negative or positive relations between the two. However, Sach (1987) has reservations about the premise that trade liberalization is a necessary component of successful outward-oriented strategies. He argues that the success of East Asian countries was to a large extent due to an active role of the government in promoting exports in an environment where imports had not been fully liberalized; where the macroeconomic equilibrium was fostered

The above ambiguous empirical findings mainly concentrate the effect of trade liberalization on economic growth. However, most studies using time series and panel data econometrics suggest positive impacts of trade liberalization on import and export

For instance, by developing theoretical model on the relation between trade liberalization and import and empirical application to Morocco, Bertola and Faini (1991) provides analysis of the response of flow of imports to the elimination of tariff and non-tariff barriers. The researchers confirm that quantity restriction (QR) had a significant impact not only on the level of imports, but also on their sensitivity to income and price variations. For instance, the authors demonstrated that, had QR, for consumption goods been lifted in 1985 (the date used for prediction test), imported items would have increased by more than 50% and their income elasticity would have increased from 0.93 to 1.20.

Moreover, Faini et al (1992) study the impact of trade policy on import demand in developing countries. These researchers categorized imported goods in to two that is, those subject to quantitative restrictions, and those that can freely enter the country. Based on such categorizations for developing countries, they found that the estimated income elasticities in these countries are generally higher than unity and that the relative prices are significant with elasticity less than unity. However, their measured impact of price and income elasticities becomes less evident when a restrictive trade regime effectively constrains import flows. Their results suggest that the real effect of income and price changes (e.g. devaluation) on imports are more evident when the impact of import controls and/or liberalization policies is included.

Similar Positive relationship has also been shown in (Paulino et al, 2001, and A.P. Thirlwall et al, 2004) using cross-country panel data regression

Kohli and Sing (1989) estimated the effect of trade liberalization on export growth for 41 developing countries by dividing sampled countries in to 'outward-oriented' and 'non-outward oriented' countries for the period 1960-70 and 1970-80. They found that the coefficients for export growth are always significant for the period 1960-70 but not always for 1970-80.

Moreover, Brahman et al (1991) studied relationship between trade liberalization and real export growth for 20 countries for the period 1951-87. They supported for export promotion hypothesis. Similar positive relationship has been studied by (Thomas et al 1991, Joshi and Little, 1996, Ahmed, 1999 and Thirlwall 2005)

On the other hand, other studies have little evidence of the relationship between trade liberalization and export growth. Particularly, Shafaedin (1995) argued failure of trade liberalization to bring positive export growth in the developing world. Similar result was found by (UNCTAD, 1989, Agosin, 1991, and Jekin, 1996)

### **3. Ethiopian Trade Policy and Economic Performance**

#### **3.1 Ethiopian Trade Policy**

As we have discussed in the review of the literature, a good access to market has an advantage in terms of rising of income at individual level (with appropriate redistribution policy) and at national level. This is due to the simple fact that as the nation's products get good access to market abroad, its export will grow more and hence higher income growth. For poor countries like Ethiopia, a foreign trade policy that advocates good market access helps the country to alleviate poverty. Certain products (like coffee in Ethiopia) which the poor depends on for their livelihood usually face low domestic price and hence low income for the poor. A good access to foreign market will provide the poor higher prices for their products and this gives a momentum to poverty reduction that stems from a rise in income all around. In order to achieve this momentum in income rise and poverty alleviation from good access to foreign market, Ethiopia has followed different trade policies under the three regimes that govern the country.

We can classify these trade policies followed by the three regimes in two categories, i.e., policies pre-1991/92 [both Imperial and Military (DERG) regimes] and post -1991/2 (EPRDF, current regime). Both Imperial and Military regime are classified in one category because in both regimes there were prolonged over valuation of exchange rate (on average 2.44 Birr per US dollar in Imperial and 2.07 Birr per US dollar in Derg regime), high tariff rates (on average 240 percent in both regimes), high export tax (7.7 and 10.1 percents of government revenue came from export tax in Imperial and Derg regimes respectively), extensive foreign exchange control and other non-tariff barriers. All these indicate both regimes were following a repressive trade policy with the objective of strongly inward oriented development strategy. These policies are likely to have an impact on import and export. Particularly it influences export through loss of efficiency of domestic firms due to the prolonged protection and hence become less competitive when competing with other firms in the external market.

Despite the fact that both Imperial and Derg regime were following an inward oriented policy which emphasizes on import substitution, their development plans indicate that these regimes made some effort to promote and diversify the country's export. In the following paragraphs, we will see what the 'three different five- year development plan' of the Imperial

and the ‘ten-year development plan’ of the DERG regimes imply with respect to their foreign trade policy.

The imperial’s three development plans are called “the first five-year development plan (1957/58-1962/63)”, “the second five year (1963/64-1968/69)” and “the third year development plans (1969/70-1973/74)”. Even though these plans in general can be said to be biased to wards import substitution policy, the three plans differ in the degree of emphasis and incentives to be given to export for diversification and promotion. The first development plan gave minor attention for export promotion but gave larger emphasis to import substitution of industrial products. Compared to the first development plan, the second five-year development plan gave better attention to export. But more of its attention was to traditional export products such as coffee, hides and skins, oil seed, pulses and others. It also stipulated an important role to be played by new export products of industrial origins and mining products. This plan also set the share of agricultural exports to exhibit a decrease from 93.6 percent in 1962/63 of the total export to 72.3 percent in 1967/68 while the share of manufactured products was planed to increase from 5.2 to 24.2 percent during the same year. To implement this plan, incentives like profit/income tax holidays, export trade licensing simplification, restructuring and strengthening of chamber of commerce, and others were offered for investors who engage themselves in the production of non-traditional export items. The third-five year development plan gave a great deal of attention for foreign trade in general and for the export sub-sector development through diversifying variety of export items in particular. In this plan period, agricultural product exports were expected to decrease to 75 percent in 1973/74 from that of 86 percent in 1967/68. Through the addition of new agricultural products in the export basket, the share of coffee was envisaged to fall from 55 to 40 percent at the end of the plan period (see D.Gemechu, 2002).

Following the imperial regime, the Derg regime came in power in 1974/75. The regime set a ten-year development plan from 1985/86-1994/95. With respect to foreign trade policy, this plan is more import protectionist than the three development plans of the imperial regime, but its plan with respect to promotion and diversification of export seemed to be better. The plan predicted the share of traditional exports to decrease from 73.5 percent in 1985/86 to 53.2 percent in 1994/95, while the share of other export products to rise from 26.5 to 46.8 percent in the plan period. In order to achieve its goals, the government planed a large number of incentives and approaches like provision of favourable tax, tariffs and foreign exchange rate

measures, improving exports in terms of quality, quantity and variety and providing current information on world market prices and other factors in the international market to exporters and producers. In addition, to counter balance the negative effect of distortionary policies and hence to secure growth in export, the government introduced an export subsidy in 1983/84. However, the subsidy introduced was not sufficient in terms of coverage and amount to neutralize the prevailed anti-export bias incentive structure (D.Gemechu, 2002).

After the above centralized and regulated decades of economic circumstances, the current government who came in power in 1992 has been undertaken major policy reforms. These measures include reduction of tariff and non-tariff barriers, harmonization and simplification of tariffs, including tariff lines and dispersions, removal or tariffication of quotas, reduction and gradual elimination of all controls including on domestic prices, deregulation and realignment of foreign exchange rates and liberalization of investment policies.. The average tariff levels on luxury consumer goods were reduced from over 230 percent in the late 1980s to 28.9 percent in 1995 (early phase of the reform process) to 17.5 percent in 2002. The same average for LDCs as a group was about 20 percent in 2002. The range of tariff rates in Ethiopia narrowed, from 0-to-240 in the pre-liberalization period to 0-to-80 in 1995 and 0-to-35 in 2002. The degree of dispersion of tariff measured as coefficient of variation also declined from 82.4 percent to 69.7 percent during the same period. The country has also realigned its foreign exchange rate by substantially devaluating its currency (the Birr) from the official rate of 2.07 per a US dollar in the pre-liberalization period to 9.04 currently, bringing the parallel and the official market rates to symmetry. According to M.Delelegn (2005), the measures that the country has undertaken with respect to trade policy can group the country among the relatively open developing countries.

This massive trade reform result in an increase in the value and volume of both export and import. More over, it results in a decrease in anti export-bias incentive, which indicates a move to wards out ward oriented development strategy. The following table shows the effective exchange rate for exports ( $EER_x$ ), imports ( $EER_m$ ) and the anti-export bias ( $EER_m/EER_x$ ) before and after the reform.

Table 3.1 Effective exchange rate (Birr/Dollar) and anti-export-bias ( $EER_m/EER_x$ ).

Item	1985/86-1991/92 Average	1992-1999 Average	Percentage Change (%)
Effective Exchange rate( $EER_x$ ) for exports ( $EER_x$ )	1.89	5.82	208% increase
Effective Exchange rate for imports ( $EER_m$ )	3.74	8.39	124% increase
Bias ( $B_t$ ) of trade regime.	1.98	1.44	27% decrease

Source: D.Gemechu, 2002

From table 3.1, we can see that the Effective Exchange rate paid by exporters has increased on average from 1.89 in the pre-liberalization period to 5.82 post liberalization, 208 percent increment. However this is accompanied by 124 percent increase in Effective Exchange rate paid by importers in the post liberalization periods.

Using the Kruger-Bhagwati measure of trade liberalization (Anti-export bias,  $B_t$ ), the country still shows anti-export bias even though this bias is decreased by 27% in the post reform period.

### **3.2. Economic Performance**

In this sub section, we will see the performance of export, import and GDP in the three regimes in relation to trade policy and other factors, which make positive and /or negative contribution to the performance of these variables. Section 3.2.1 analyses the performance of export pre-and post reform. Similar analysis is provided in sections 3.2.2 and 3.2.3 for import and GDP respectively.

#### **3.2.1. Performance of Ethiopian Export Pre-and Post Trade Liberalization**

The Ethiopian export sector is characterized by limited export items, the majority of which are primary products and minerals such as coffee, oil seeds, meat and meat products, chat and gold. In fact, the country also exports semi-processed products, such as leather and leather products, sugar and molasses, which constitutes minor, share in the total volume of exports. For along period, coffee has been the single dominant exports of the country. For this reason the export earning of the country, fluctuate due to the fluctuation of world price of coffee and recurrent drought in the country. The fact that its export items are primary implies they are price and income inelastic in the world market.

Fig. 3.2.1 and 3.2.2 below shows the value and growth of export in the 1960's and early 1970's, respectively (The last decade of the Imperial regime).

Fig3.2.1 Value of Export and Import from 1960-1973(in Million Birr)

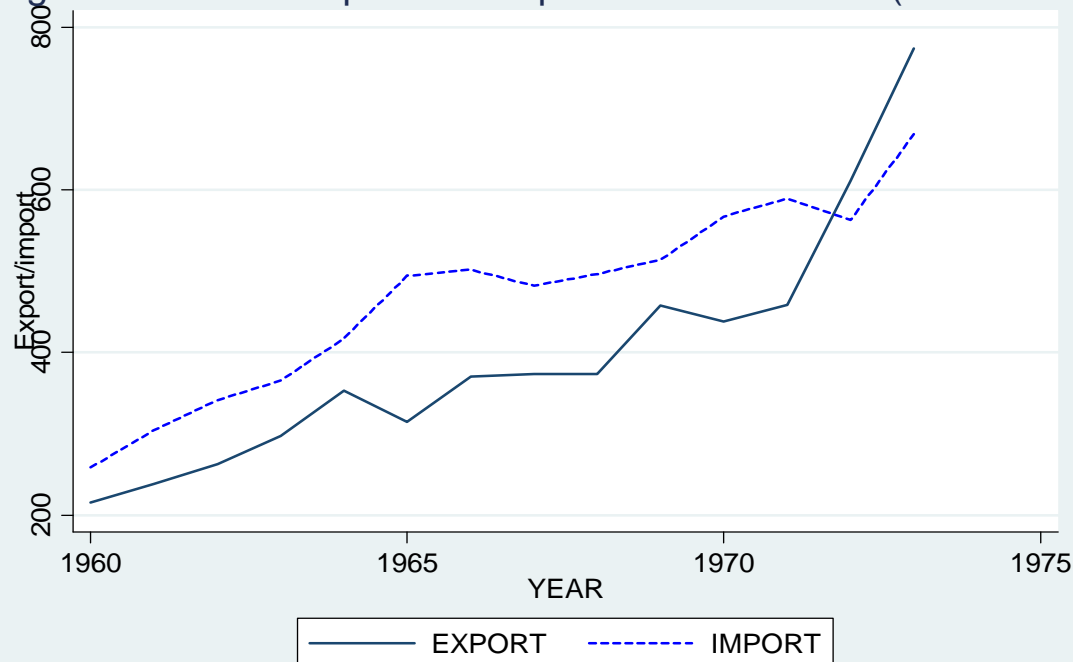


Fig3.2.2 Growth of Export and Import from 1960-1973(in percent )



Source: own computation using NBE data



During this time, the average rate of growth of export was 11.03% and the average value of export value was 395.5 million Birr. 1965 and 1970 are characterized by negative growth rate of export and decline in the value of exports. Due to the better attention given to export in the third development plan of the imperial regime, there was a remarkable growth of export during the last three years of the regime which is indicated by steep upward trend in the growth and value of export. Even if the regime is characterized by import substitution policy, its imported expenditure was greater than its export earnings in these periods except the last two years of the regime.

However, as it is shown in the fig 3.2.3 and 3.3.4 below, the trend in the export value

Fig3.2.3 Value of Export and Import from 1974-1991(in Million Birr )

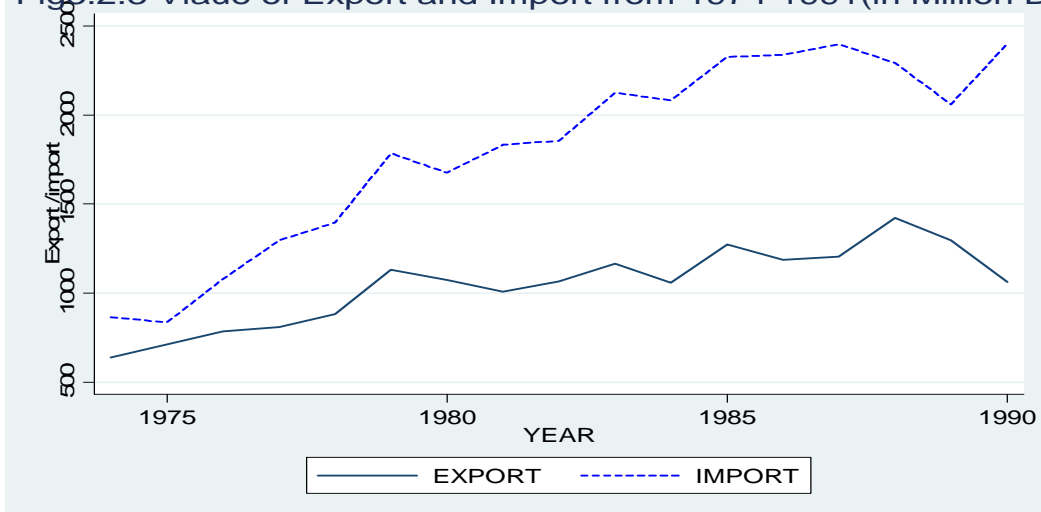
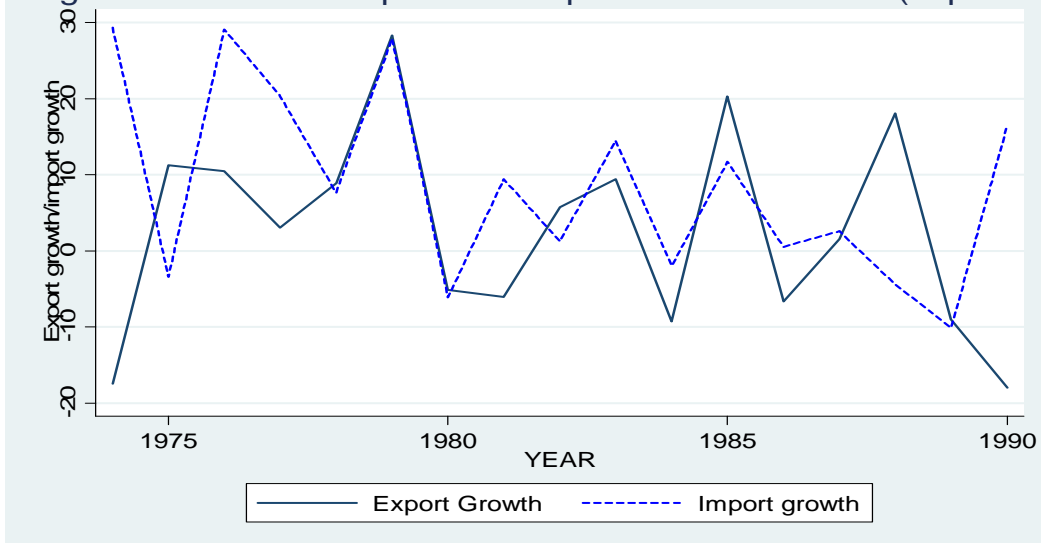


Fig3.2.4 Growth of Export and Import from 1974-1991(in percent )



Source: Own computation using NBE data

was increasing at a decreasing rate with an average growth rate of 3.2 percent. The regime achieved a maximum of 28.3 percent growth of export in 1979 but this is partly associated

with good weather condition.. Nevertheless, the average growth of export earning in this period is smaller than the pervious regime. There are some reasons why the regime faces such smaller growth of export despite its development plan projected better growth. The first reason is related to some of the factors, which made the country to categorize among the list of relatively closed countries during this time. These are the over valuation of exchange rate and heavy tax on export. This means during this period one dollar was exchanged only 2.07 Birr, which makes the official earning of exports low compared to the smuggled export earning sold in the black market at 4.85 birr per Us dollar, on average. More over, there was also heavy tax to exported item which has its negative impact on the profitability and incentive to further exports(10.1 percents of government revenue came from export tax).

The Second reason is related to; according to MEDaC (1999), the expansionary fiscal and monetary policy of the government during this period. This expansionary macro policy increased the demand for tradable and non-tradable items domestically. However, being the country is small; the domestic excess demand would have no significant impact on the international price of these tradable goods and hence its home price for given exchange rate would be unchanged. However, the excess demand of both tradable and non-tradable increased the price of non-tradable goods in the home country. This causes resources to shift from tradable to non-tradable sector. This process contributed to the decline of in the growth of exports since no change in the price of export due to the increased demand.

The current government introduced massive policy of trade reform to improve the performance of export sector. This includes removal of export tax, devaluation of domestic currency, dismantling of government monopoly in export, abolishing the mandatory approval requirement for exporters by National Bank of Ethiopia, introducing foreign exchange retention scheme allowing exporters to retain part of their foreign exchange earning/proceeds(at present exporters are allowed to retain 10% of export proceeds with out time limitation.).Other measures to assist exporters include a bonded manufacturing warehouse scheme and an import duty rebate scheme aimed at providing exporters of manufactured imported inputs at world prices.

As a result of these measures and others like good weather, the average growth of export increased from 3.2 percent in the pre-reform period to 27.98 percent growth post the reform. Compared to fig3.2.3 with slow increment in export and wider gap between export and import in the 1980's and last two years of the Derg regime, Figure 3.2.3 below shows relatively

faster increase in the value of export and narrower gap between export and import in the 1990's and increasing the gap after wards. Fig 3.3.4 shows a sharp decline in the growth of export in the early 1990's. This is because of the highest growth of export in the year of after political transition. This means export increase by more than 100% in 1992 from the 1991 earning. This was due to the war and instability in 1991, which makes its export very small compared to the 1992's. Yet, the current regime face Lower growth of export from 1995-2000 with -3.4 and -0.5 percents growth in 1997/98 and 2000/01, respectively. This lower and negative growth in export in these periods is associated with demand and supply constraints to export of coffee (it accounts 60% of total export items of the country) and other items.

Fig3.2.5 Vlaue of Export and Import from 1992-2006(in Million Birr )



Fig3.2.6 Growth of Export and Import from 1992-2006(in percent )



Source: own computation using NBE data

The demand side constraint is related to the decline in the international price of coffee in these periods that reduces the value and volume of the export quality<sup>4</sup> coffee of the country while the domestic quality coffee has increased in these periods as farmers illegally divert their production to domestic market when domestic prices are higher than international price. The supply side constraint is related to drought (in 1997/98), border conflict with Eritrea (in 2000/01), institutional and other administrative problems. Moreover, the domestic coffee auction market in these periods had negative impact in the export of coffee. It prevents direct trading between processors and exporters and prevents vertical integration i.e. exporters involved in processing and washing activities cannot integrate these activities because they may not be able to re-acquire the coffee they supplied at an auction. In addition, it inhibits exporters from making long-term contracts with importers since they cannot be assured of buying at an auction the type of coffee they contracted to supply. Furthermore, the inability of buyers to inspect and test the quality of coffee is another constraint that further reduces confidence in quality. This vindicates the adverse consequence of heavily reliance on a single commodity.

### **3.2.2 Performance of Ethiopian Import Pre-and Post Trade Liberalization.**

According to the National Bank of Ethiopia (NBE) (2002/3), capital goods continued to be the dominant import items of the country accounting, on average, 29% of the total value of import. Furthermore, consumer goods (especially non-durables) and fuel stood second and third in the country's import structure constituting on average, 27% and 16% of the total of imports. This implies the majority of imports of the country are necessity items, infrastructural and developmental.

Table 3.2.2 below shows the value and growth rate of import from 1981/2(pre-reform) to 2004/5(post reform). As shown in the table, the average value and growth rate of imports in the pre-reform period was 1825.69 million Birr and 6.24%, respectively. However, this is lower than the figure in the post-reform period with 17,901 million Birr and 22.77% in the value and growth of import respectively. This might be because of the measures taken to liberalize trade and the relative relaxation of shortage of foreign exchange reserve due to the increased export earning in the post-reform period.

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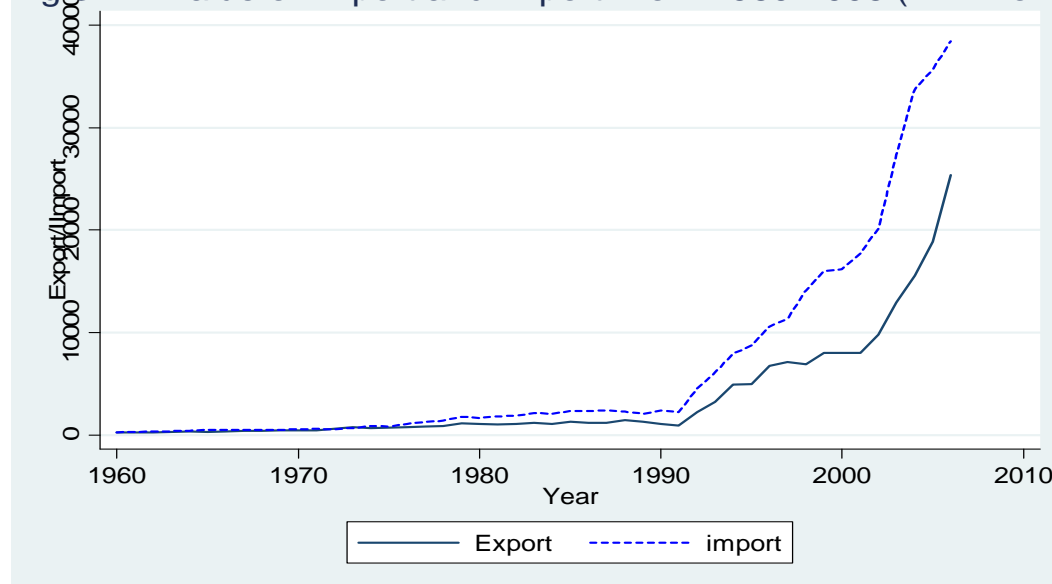
<sup>4</sup> Broadly Ethiopian coffee is classified as export quality and domestic quality even though there are also different qualities in each class.

Table 3.2.1 the value and growth of imports from 1981-2006

Year (pre-reform)	import(million Birr)	Import growth(%)	Year (post reform)	import(million Birr)	Import growth(%)
1974	864.4	4.5	1992	4520.5	103.3
1975	834.6	-3.4	1993	6090.5	34.7
1976	1077.5	29.1	1994	7950	30.5
1977	1296.3	20.3	1995	8721.5	9.7
1978	1395.4	7.6	1996	10584.7	21.4
1979	1784.6	27.9	1997	11341.2	7.2
1980	1675.5	-6.1	1998	14101.5	24.3
1981	1833.2	9.4	1999	15969.3	13.3
1982	1855.9	1.2	2000	16193.6	1.4
1983	2125	14.5	2001	17709.5	9.4
1984	2082.8	-2	2002	20136.8	13.7
1985	2326.3	11.7	2003	27333.9	35.7
1986	2338.4	0.5	2004	33728.7	23.4
1987	2398.4	2.6	2005	35684.3	5.8
1988	2292.3	-4.4	2006	38452.6	7.8
1989	2060.3	-10.1			
1990	2398.2	16.4			
1991	2223.4	-7.3			
<b>average</b>	<b>1825.69</b>	<b>6.24</b>	<b>average</b>	<b>17901</b>	<b>22.77</b>

Source: NBE

Fig 3.2.7 Value of Export and Import From 1960-2006 (in Million Birr)



Source: own computation using NBE data

From fig 3.2.7 above, even though the increased in the value of export in the post trade liberalization is better than pre- liberalization periods, this increased earning in not enough to

cover the import bill of the country. The graph shows the country is experiencing trade deficit for more than four decades. This deficit is worse in post liberalization than pre-trade liberalization. The value and growth of trade deficit in pre-trade liberalization was -474.6 Million Birr and 7.4 percent respectively while post trade liberalization these numbers become -8396.3 million Birr and 19.34% The main reasons why the country has been facing deficit for such long periods of time and why this is rising in the post liberalization periods are explained below.

The first reason is related to the price and income elasticity nature of Ethiopian exports. As it is explained in section 3.2.1 above, most of Ethiopian exports are both price and income inelastic. This means although trade liberalization measures like removal of export subsidy and tax, devaluation of domestic currency, etc decreases the international price of its primary products; the quantity consumed does not increase in proportion to the price decline. In addition, though the real income of the country (ies) importing Ethiopian export is/are bound to rise due to the decline in that price, the consumption of these primary items in the importing country (ies) does/do not increase proportionally. That is why export earnings are unable to offset the increased imports.

The second reason has some thing to do with the nature of Ethiopian exports. According to NBE (2004), most of Ethiopian exports are dominated by agricultural items, which accounts for 90% of the total volume of exports, coffee alone accounts for 60% of the total volume of exports. The two major export items next to coffee are hides and skins and chat respectively. Evidently, the country depends heavily on very limited number of exportable items for its foreign exchange earning. Moreover ,bringing significant quantitative increase in the supply of these export items in the short run is very problematic due to the fluctuation in agricultural production (caused by weather fluctuation ,pests and disease) and long gestation period of many agricultural products like coffee.

The last but not the least reason is related the nature of its import. The majority of the country imports are capital goods, fuel, fertilizer and semi finished goods, which account for more than 60% of the total import of the country. These goods are very essential for the development efforts of the country. In other words, unless the development efforts of the country are compromised, it is unlikely at this stage that these import items would decline. In a view of this, imports of the country keep on increasing rather than declining, there by worsening the trade deficit of the country.

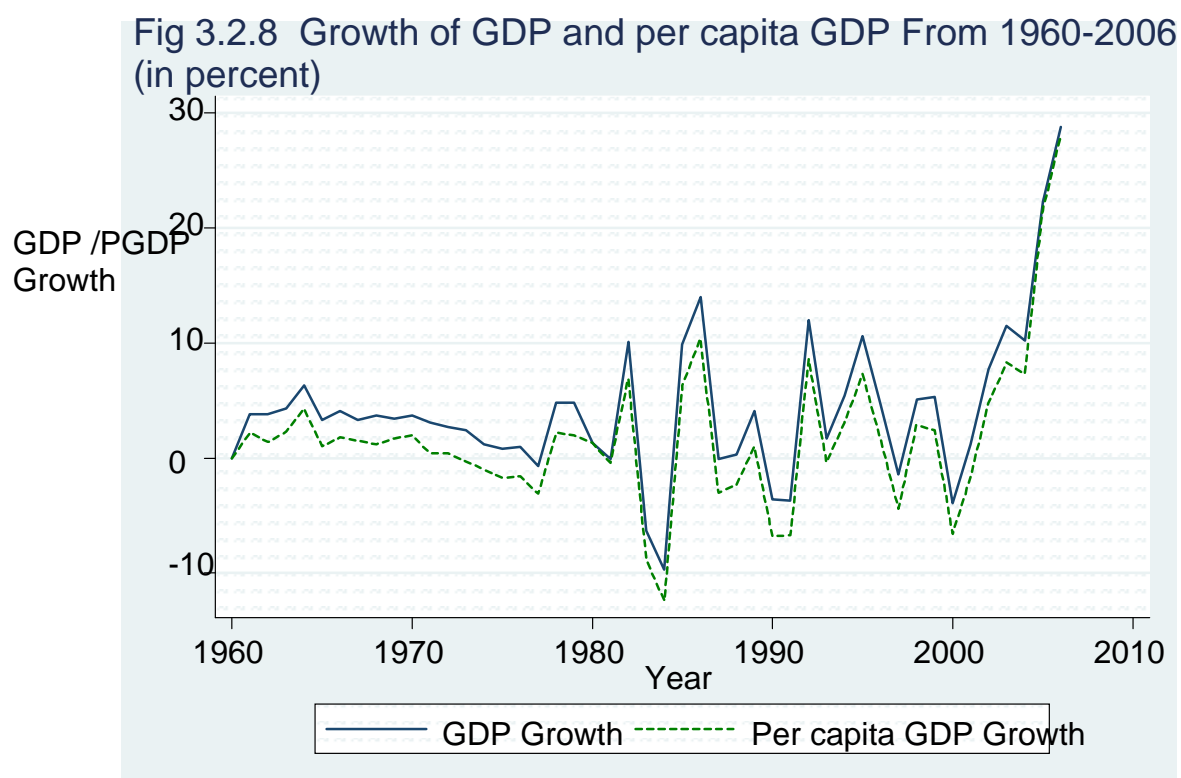
### 3.2.3 Performance of Ethiopian GDP Pre-and Post Trade Liberalization

Above and beyond the policy impact of the country's GDP performance, vagaries of nature play a key role in determining the overall economic performance. The over all economic performance is largely determined by what happens in the agricultural sector; which inturn is extremely dependent on the amount and timing of rainfall. We will see in the following paragraphs the over all growth performance of the country in the pre and post reform periods. As can be seen from the table 3.2.4 below, there was 3.42% average growth of GDP (1.67% per capita growth) in the imperial regime. However, this growth rate was deteriorated

*Table 3.2.2 GDP, Per capita GDP and investment growth from 1960-2006*

Year	GDP Growth	Per capita GDP growth	Growth of Investment
1960-1973 (Imperial regime)	3.42 %	1.67%	5.6 %
1974-1991(Derge regme)	1.53 %	-0.98%	4.7%
1992-2006 (EPRDF ,current regime)	8.08 %	5.51%	16.4 %

Source: Own computation using MEDaC data



Source: Own computation using MEDaC data

to 1.53% (per capita growth decreased to -0.98%) during the Derg regime. This declining trend in GDP and per capita GDP growth can be seen from Fig. 3.3.8 above. This graph shows positive and relatively stable growth of GDP and per capita GDP in the imperial regime (19960-1973) and volatile growth of both GDP per capita GDP in the Derg regime. We can mention some reasons why this happened in Derg regime. This can easily be seen if we disaggregate this in rather short period intervals. During the period of 1974-1977 the growth rate was 0.38 % ( the per capita growth being -2.16%). This low growth rate in the early period of the regime can be explained by the policy change (From market based to socialist policy paradigm) and the war with Somalia. Because of good weather and relative stability of the country from 1978-1982, the GDP growth rate was increased to 4.02 % ( 1.8% per capita growth). In 1983 and 1984 GDP growth rate decreased to -8.9 % and -12.4 % respectively. These were periods of sever drought. This implies beyond policy changes, the growth trend is related to vagaries of nature.

On the other hand, table 3.2.3 indicates the growth of GDP and per capita GDP are increased to 8.08 percent and 5.05 percent in the current regime. This good result is achieved due to the massive policy changes that are suitable for investment (witnessed by higher growth of investment projects shown in table 3.2.2 above) and good weather in some periods. However, like in the Derg regime Fig 3.2.8 shows ups and downs in the growth performance of this regime. For instance, in 1997/98 the growth rate of GDP was -1.4% and this is associated with the recurrent drought that happened again in this period. However, the subsequent year (1998/99) rebounded to a positive GDP growth of 5.1%. Nevertheless, from 2000-2001 the growth rate was fall to -1.35 percent due to the border conflict with Eretria. The effects of the war were reflected in fiscal instability with widening budget deficit, and deteriorating external position with increasing current account deficit. From 2003/04-2005/06 the average GDP growth was 11.48 % ( with per capita GDP growth being 9.75 percent) which places the country among the top performing economies in sub-Saharan Africa. The contribution of agriculture to this good GDP growth was the highest of all sectors in the country. For instance, the percentage contribution of agriculture to GDP was 73.4, 65.5 and 53.9 in 2003/04, 2004/05 and 2005/06 respectively. The good performance of GDP (agriculture) in these periods was largely attributed to improved farmers productivity achieved through better use of modern agricultural inputs and the favourable weather condition in these periods.



In sum, the above graphs and averages indicate that the performance of the Ethiopian economy in terms of export, import and GDP has been improved following the adoption of massive policy changes in 1992. This improvement is due to multitude of factors with in the reform and out side the reform package like weather condition. Thus, the above discussion does not show us the net effect of the trade liberalization on export, import and trade liberalization. This will be done in the next section using econometric analysis.

## 4. Econometric Analysis

In order to have a clear picture of how trade liberalization affect growth of export, import and GDP, an econometric analysis of their respective model is crucial. But, we need first to specify the models for export, import and GDP growth. In section 4.1, we will specify Export, import and GDP growth models. In section 4.2, the source and type of data used for this analysis will be discussed. Lastly, discussions of the estimation methods and results of the models specified under section 4.1 and some test results of the models and the variables will also be presented under section 4.3.

### 4.1. Model Specification

#### 4.1.1 Modelling for Export Function

In this section, we use export model specified by Thirlwall (2004) and applied to see the impact of trade liberalization on developing countries. The function is derived from its standard demand function. Demand for export is a function of 'world income' and its relative price, as measured by the ratio of its domestic price to the foreign price of related goods where both prices are measured in common currency. According to Thirlwall (2004), assuming that both price and income elasticity of demand for exports are constants, the function can be expressed as follows

$$X = A \left[ \frac{P_f E}{P_d} \right]^{\beta_1} W^{\beta_2} \quad (16)$$

Where A is constant, X is quantity of export demanded,  $P_d$  are domestic prices,  $P_f$  are foreign prices, W is world income and E is nominal exchange rate;  $\beta_1$  and  $\beta_2$  stand for price and income elasticities, respectively. Taking logs of the variables, and expressing the logarithm of relative price of export by one variable ( $LP_x$ ), the model can be rewritten as::

$$LX_t = \beta_0 + \beta_1 LP_x + \beta_2 LW + \mu_{1t} \quad (17)$$

Where  $\mu_{1t}$  is error term,  $LP_x = \text{Log}\left(\frac{P_f E}{P_d}\right)$  and L is logarithm

$\beta_1$  is expected to be negative and  $\beta_2$  is expected to be positive.

Thrilwall (2004) modified (17) by assuming<sup>5</sup> that export demand does not adjust instantaneously to changes in price and income. Thus, we have dynamic specification for estimating export function of the form:

$$LX_t = \beta_0 + \beta_1 LP_{xt} + \beta_2 LW_t + \beta_3 LX_{t-1} + \mu_{1t} \quad (18)$$

Where  $LX_{t-1}$  is logarithm of lagged export.

To see the impact of trade liberalization on export, equation (18) is further modified to include a measure of trade liberalization. As we have discussed in the second section a shift dummy variable can be taken as measure of trade liberalization where the dummy variable takes the value of zero for the pre trade liberalization periods (pre-1992) and one after wards. Moreover, Thrilwall (2004) argued that trade liberalization can affect the price and income elasticities of demand for export. For example, liberalization could increase the sensitivity of exports to price and income changes by making it easier for producers to shift resources in to the trade sector; by facilitating structural change, and simulating efficiency. Such interaction effects can be estimated by including two slope dummy variables, (libw) and (libp) to capture the joint effects of the elimination of trade distortion measures on income and price elasticities, respectively. More over, we have added another dummy variable d, which represents one for periods of war and drought and zero other wise.

This modified version of export function that includes a measure of trade liberalization, the dummy for war and drought and the interaction effects is given by:

$$LX_t = \beta_0 + \beta_1 LP_{xt} + \beta_2 LW_t + \beta_3 LX_{t-1} + \beta_4 Lib_t + \beta_5 (LlibPx_t) + \beta_6 (libw_t) + \beta_7 d + \mu_{1t} \quad (19)$$

$\beta_1$  and  $\beta_7$  are expected to be negative and  $\beta_2$  is expected to be positive. Since the effect of trade liberalization is ambiguous, the sign of  $\beta_4$  cannot be expected ahead.

#### **4.1.2. Modeling for Import Function**

As in the export model above, we will use the import model specified by A.P. Thrilwall (2004) from the import demand function, which is the function of its relative price and domestic income as measured by Gross Domestic Product (GDP). Assuming that price and income elasticities of demand for imports are constants, the function can be written as:

$$M = \phi \left( \frac{P_f E}{P_d} \right)^{\delta_1} GDP^{\delta_2} \quad (20)$$

---

<sup>5</sup> This assumption is realistic because instantaneous response to change in price and income implies there is no difference between short run and long run elasticities of export with respect to both price and income. It is more realistic to assume that exports adjust only partially to changes of price and income.

Where  $\phi$  is constant, M is quantity of import demanded, GDP is proxy for Ethiopian income and the rest of the variables are described before;  $\delta_1$  and  $\delta_2$  denote price and income elasticities, respectively.

Import log model is derived by taking logarithm of equation (20). Like the export log function, the import log function can also be extended by adding trade liberalization dummy variable (lib), lagged import and the interaction effects of trade liberalization with relative price of price import and income and another dummy variable that represents war and drought

$$LM_t = \lambda + \delta_1 LPm_t + \delta_2 LGDP_t + \delta_3 LM_{t-1} + \delta_4 lib + \delta_5 (libLPm_t) + \delta_6 (libLGDP_t) + \delta_7 d + \mu_{2t} \quad (21)$$

Where  $LPm = \text{Log}\left(\frac{PdE}{Pf}\right)$

We expect  $\delta_1$  and  $\delta_7 < 0$ , the remaining coefficient to be positive<sup>6</sup>.

When we estimate equation (21), we need to take in to account feed back relation ship between import and GDP. If GDP is indeed endogenous (will be tested in section 4.3), the import growth function above will be estimated simultaneously with GDP equation specified in section 4.1.3 to avoid endogeneity bias.

#### **4.1.3. Modelling for GDP Function**

The analysis of the impact of trade liberalization on economic growth is carried out using the GDP function specified by P.P.Snatos (2005) and applied to cross-section of developing countries. The model is derived from the standard production function, which is a function of labor capital and export.

The standard production function is given by

$$Y_t = f(L_t, K_t, X_t) \quad (22)$$

Where  $Y_t$  is aggregate out put,  $L_t$  and  $K_t$  are the conventional labour and capital inputs and  $X_t$  denotes as before exports, which is introduced as an additional input. Equation (22) can be extended by including import as determinant of aggregate out put.

$$Y_t = f(L_t, K_t, X_t, M_t) \quad (23)$$

Where  $M_t$  is import and the others are explained before.

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<sup>6</sup>  $\delta_2$  is expected to be positive due to the fact income positively affects demand and GDP is taken as proxy for domestic income.

Equation (23) can be extended further first by taking logarithm of equation (23) and then adding trade liberalization variable (lib), one period lag of GDP and the dummy variable for war and drought as follows:

$$LGDP_t = \alpha_0 + \alpha_1 LLABOR_t + \alpha_2 LGCAF_t + \alpha_3 LX_t + \alpha_4 LM_t + \alpha_5 lib + \alpha_6 d + \alpha_7 LGDP_{t-1} + \mu_{3t} \quad (24)$$

Where  $LGDP_{t-1}$  is one period lag of logarithm of gross domestic product,  $LLBOR$  is a logarithm of labour force,  $LGCAF$  is logarithm of gross capital formation as a proxy for capita and all other variables are explained above.

We expect  $\alpha_1, \alpha_2, \alpha_3$  and  $\alpha_7$  to be positive and  $\alpha_6 < 0$  but the sign of  $\alpha_5$  is ambiguous as it is explained in the empirical literature with respect to developing and developed countries.<sup>7</sup>

As explained in equation (21), estimating equation (24) with out testing the endogeneity of export, import will lead to simultaneity bias if indeed they are endogenous. Hence simultaneous equation model will be estimated which takes in to account the feed back relationship among these variables and economic growth. By bringing equation (19),(21),and (24),the simulations equation model is specified as:

$$LGDP_t = \alpha_0 + \alpha_1 LLABOR_t + \alpha_2 LGCAF_t + \alpha_3 LX_t + \alpha_4 LM_t + \alpha_5 lib + \alpha_6 d + \alpha_7 LGDP_{t-1} + \mu_{3t}$$

$$LX_t = \beta_0 + \beta_1 LP_{xt} + \beta_2 LW_t + \beta_3 LX_{t-1} + \beta_4 Lib_t + \beta_5 (LlibPx_t) + \beta_6 (libw_t) + \beta_7 d + \mu_{1t}$$

$$LM_t = \lambda + \delta_1 LPm_t + \delta_2 LGDP_t + \delta_3 LM_{t-1} + \delta_4 lib + \delta_5 (libLPm_t) + \delta_6 (libLGDP_t) + \delta_7 d + \mu_{2t}$$

Where all variables are explained above.

#### **4.2. Data Source and Type**

The main sources of the data for this study are the National Bank of Ethiopia(NBE),Ethiopian Central Statistical Authority(CSA), Ministry of Finance and Economic Development(MEDaC) World Bank Development Indictor and Penn world Tables<sup>8</sup>.

Time series data have been taken from the above sources from 1960-2006 for most of the variables under investigation. We take annual data due to unavailability of reliable quarterly data for all of the variables.

More over, due to data unavailability for capital we use gross capital formation as its proxy though it would result in over estimating the contribution of capital as a factor of production

<sup>7</sup> The sign of import coefficient in the GDP equation could be positive or negative depending on the nature of products the country is importing and its foreign exchange earning reserve.

<sup>8</sup> We can get it from this site: <http://www.bris.ac.uk/Depts/Economics/Growth/summers.htm>

to the rate of economic growth. I also use number of population whose age is between 18-64 years of old as a proxy for labour force.

### **4.3. Discussion of Estimation Methods and Results**

If the above single and simultaneous equation models are estimated using Ordinary Least Square (OLS), the resulting parameters will be biased if any of the right hand variables in these equations are found to be endogenous. In equation (21) GDP and in Equation(24) both export and import are suspected to be endogenous. The Wu-Hausamn test is employed to detect whether or not we have this endogeneity problem in each of the above equations. Briefly, this test is carried out in two steps. First, we apply OLS regression of the suspected endogenous variable on the remaining exogenous variables of related equations. On the second step, the residual of the first step is included as a right hand variable in the original equation and test whether the coefficient of this residual is significant or not. If it is significant, then the dependent variable of the first step regression is indeed endogenous and if it appears as a right hand side variable in any of the equations, it will result in endogeneity bias. The computed F-values and the P-values of the test of the residuals of regressions are tabulated below.

**Table 4.1: Wu-Hausman test results.**

Residual included in	Computed F-value	Computed F-probability (Computed P-value)
Equation (21) (GDP as endogenous)	246.5**	0.000
Equation (24) (Export as endogenous)	10.95**	0.002
Equation (24) (import as endogenous)	3.4*	0.06

Source: Own computation using STATA

(\*\*) = significant at 5% level of significance and (\*) = significant at 10% level of significance.

From above table the residual in equation 21 is significant at 5 %level of significance implying that GDP is a right hand side endogenous variable in that equation. Same result is obtained for import and export in equation 24, but the endogeneity of import is at 10% level of significance. Thus, we need to estimate the above models simultaneously using two stage least square (2SLS) or individually using Instrumental Variable (IV) regression to avoid endogeneity bias.

However, before any meaning full estimation is performed with time series variables, it is essential to perform tests of stationary and co- integrations. These tests help us to avoid spurious regression and determine whether the variables have long run relationships. The Augmented Dicky-Fuller (ADF) unit roots test is conducted to test the stationarity of the variables at levels and differenced form. As it is shown in table 4.2 below, all the variables are none stationary at level and stationary at first difference form. In the variable columns of the table, the first letter “L” refers to logarithm of the variables and “D” refers to difference. More over, the values with one star imply stationary at 5% level of significance and two stars implies stationarity at 1 percent level of significance. Values with out star imply non-stationarity. If a variable is non-stationary at level, but stationary at first difference, the variable is said to be integrated of order one. The table below shows that all variables have same order of integration.

Augmented Dicky-Fuller (ADF) test result together the critical values are presented below.

**Table 4.2 Augmented Dicky-Fuller (ADF) unit roots results ( with constant and with out trend)**

Variables at level	Computed ADF at lag		Variables in Difference	Computed ADF at lag	
	0	1		0	1
LGDP	2.576	1.924	DLGDP	-3.518*	-3.343*
LX	1.058	0.9063	DLX	-5.706**	-4.319**
LM	0.9592	0.8680	DLM	-3.48*	-6.004**
LPx	-1.812	-1.548	DLPx	-7.880**	-4.274**
LPm	-1.109	-0.9017	DLPx	-7.728**	-5.638**
LLABOUR	0.7734	0.7513	DLLABOUR	-5.952**	-5.418**
LGCAF	1.431	1.744	D LGCAF	-7.100**	-5.535**
LW	1.038	0.1775	DLW	-3.773*	-3.732*
LGDP <sub>t-1</sub>	1.270	1.334	DLGDP <sub>t-1</sub>	-4.924**	-4.850**
LX <sub>t-1</sub>	0.7190	0.5877	DLX <sub>t-1</sub>	-5.827**	-4.446**
LM <sub>t-1</sub>	1.096	1.010	DLM <sub>t-1</sub>	-6.005**	-3.492*
LIB	-0.6678	-0.6431	DLIB	-6.633**	-4.690**
d	-2.573	-2.278	Dd	-7.668**	-7.224**
Critical values 1%	-3.607	-3.614	Critical values 1%	-3.607	-3.614
5%	-2.941	-2.944	5%	-2.941	-2.944
10%	-2.605	-2.606	10%	-2.605	-2.606

Source: own computation using PcGIVE and STATA

\* = stationary at 5% level of significance

\*\* = stationary at 1% level of significance

Once we determine the order of integration of individual series, the next step is to find out whether the variables share a common stochastic trend, i.e. to test whether two or more variables are co-integrated. Co-integration of two or more variables suggests that there is a long run equilibrium relationship between the variables. This study is based on the Engle-Granger ADF test of co- integration. This test is carried out in two steps. We apply first OLS on (19), (21) and (23) and then conduct ADF test for the corresponding residuals from each

equations. If the resulting residuals are stationary, then it means that the variables on each equations share a common trend. The test result is presented below as tables 4.3.

Table 4.3: Engle-Granger ADF test results

Residuals	Computed ADF at lag	
	0	1
From Equation(19)	-4.147**	-3.778**
From Equation(21)	-4.927**	-4.081**
From Equation(23)		-5.381
Critical values	1%	-3.607
	5%	-2.941
	10%	-2.605
		-2.606

Source: own computation using STATA

\* = stationary at 5% level of significance

\*\* = stationary at 1% level of significance

From the above table, the residuals of the corresponding equations are stationary at 1% level of significance indicating the existence of long run relation ship among the variables in each equation.

Moreover, it is also important to see the degree of correlation among the variables which enables us to investigate problems associated with multicollinearity.

***Table 4.4 Correlation Matrix for Export Equation***

	$LX_t$	$LP_x$	LW	Lib	D	$LX_{t-1}$
$LX_t$	1.00	-0.84	0.91	0.89	-0.58	0.88
$LP_x$	-0.84	1.00	0.88	-0.79	0.17	-0.74
LW	0.91	0.88	1.00	0.82	-0.25	0.89
Lib	0.89	-0.79	0.82	1.00	-0.28	0.72
D	-0.58	0.17	-0.25	-0.28	1.00	-0.37
$LX_{t-1}$	0.88	-0.74	0.89	0.72	-0.37	1.00

Source: Own computation using STATA

From this table, we see that there is no prefect correlation among the above variables. All the correlation coefficients are less than one except for the correlation of a variable with itself. The higher correlation between export and liberalization implies the quantity of exports is higher in the post liberalization than what is observed in the pre liberalization period. This is may be due to the removal of export tax and incentives introduced by the current regime. However, the higher correlation among the regressors may result in higher the standard error of coefficient. This may make the coefficients insignificant. A way out to improve their significance is to remove a variable (other than the main variable) from the regression equation.



**Table 4.5 Correlation Matrix for import Equation.**

	LM <sub>t</sub>	LP <sub>m</sub>	LGDP <sub>t</sub>	Lib	d	LM <sub>t-1</sub>
LM <sub>t</sub>	1.00	-0.92	0.80	0.88	-0.33	0.90
LP <sub>m</sub>	-0.92	1.00	-0.67	-0.89	-0.15	0.90
LGDP <sub>t</sub>	0.80	-0.67	1.00	0.62	-0.54	0.79
Lib	0.88	0.89	0.62	1.00	-0.27	0.73
D	-0.33	0.10	-0.54	-0.27	1.00	-0.29
LM <sub>t-1</sub>	0.90	-0.80	0.79	0.73	-0.29	1.00

Source: Own computation using STATA

Similarly, table 4.5 shows higher correlation between liberalization and import. Since the liberalization variable is dummy, it implies the country has imported more items in the post liberalization periods than the pre liberalization periods. This could be due to the reduction of tariffs and removal of quantity restrictions. A similar result is observed in table 4.6 below.

**Table 4.6 Correlation Matrix for GDP equation**

	LGDP <sub>t</sub>	LX <sub>t</sub>	LM <sub>t</sub>	LGCF	LLabor	Lib	d	LGDP <sub>t-1</sub>
LGDP <sub>t</sub>	1.00	0.89	0.80	0.79	0.80	0.62	-0.54	0.89
LX <sub>t</sub>	0.89	1.00	0.90	0.89	0.95	0.89	-0.58	0.49
LM <sub>t</sub>	0.80	0.90	1.00	0.84	0.90	0.88	-0.33	0.50
LGCAF <sub>t</sub>	0.79	0.89	0.84	1.00	0.79	0.87	-0.22	0.49
Labor	0.80	0.95	0.90	0.79	1.00	0.80	-0.14	0.51
Lib	0.62	0.89	0.88	0.87	0.80	1.00	-0.27	0.33
d	-0.54	-0.58	-0.33	-0.22	-0.14	-0.27	1.00	-0.15
LGDP <sub>t-1</sub>	0.89	0.49	0.50	0.49	0.51	0.33	-0.15	1.00

Source: Own computation using STATA .

Having approved the endogeneity of some of the right hand variables ,co-integration and the degree of collinearity, estimating equations (19),(21) and (23) simultaneously using robust Instrumental Variable or 2SLS will give us consistent, unbiased and efficient estimates of the parameters of co-integrated variables. Results of the estimated long run and short run coefficients of the export equation are given in table 4.7 below.

From column (2) of table 4.7 below, coefficients of price, income and the dummy (d) have the expected sign except that price is insignificant at 5 % level of significance. All the interaction variables are left out because I found them all insignificant .The results in table 4.7 are a regression results with out the interaction variables specified in equation (19).

**Table 4.7 Regression result of Export Equation at Level and Difference**

Variable at Level ( 1)	Coefficient (2)	Variable Differenced (3)	Coefficient (4)
constant	31.2** (7.09)	constant	0.04 (0.03)
LP <sub>x</sub>	-0.5* (0.30)	DLP <sub>x</sub>	0.12 (0.14)
LW	0.98** (0.29)	DLW	0.4** (0.02)
LX <sub>t-1</sub>	1.47** (0.27)	DLX <sub>t-1</sub>	-0.34 (0.21)
Lib	1.24** (0.24)	Lib	0.17** (0.07)
d	-0.22** (0.01)	d	-0.01 (0.09)
		$\mu_{1t-1}$	0.38** (0.09)
No. observation	47	No. observation	45
$R^2$	0.95	$R^2$	0.23
F(5,41)	144.22**	F(6,40)	2.37

*Note: the values in the brackets below each coefficient are their standard errors. A coefficient with two stars (\*\*) implies significant at 5% level of significance and one star (\*) denotes significant only at 10% level of significance*

However, the coefficient for the liberalization variable is positive and significant at 5% level of significance. This means the country has experienced more exports in the post liberalization periods ( under EPRDF regime) than the exports in the pre liberalization periods( both DERG and IMPERIAL regimes).Thus, the removal of export tax and other incentives introduced by EPRDF regime under the realm of trade reform has encouraged exporters and hence increased the export of the country.

Moreover, the negative and significant coefficient for the dummy variable (d) indicates war and recurrent drought have negatively affected the exports of the country. The above table also indicates the significances of the coefficient of the lagged export at 5% level of significance that confirms Ethiopian exports do not respond immediately to changes in income, price and other factors that affect export.

The coefficients of Log-log model indicate sensitivity of the dependent variable with respect to each of the independent variables, i.e. it shows elasticity. Thus, from table 4.7 the price and income elasticity of Ethiopian export is less than unity, which proves the price and income inelasticity nature of its export products approximately at 10 % and 5%level of significance, respectively.

Equation (19) shows only the long run relationship among the variables; their short run relationship can be shown by estimating the corresponding model called the Error Correction Model (ECM). The Model is specified by taking first difference of the variables in equation (19) and including one period lagged value of the residual of (19).

$$DLX_t = \alpha_0 + \alpha_1 DLP_{xt} + \alpha_2 DLW_t + \alpha_3 DLX_{t-1} + \alpha_4 Llib_t + \alpha_5 \mu_{t-1} + \alpha_6 d + \varepsilon_t \quad (25)$$

Where the first letter 'D' of the above variables refers to first difference and  $\mu_{t-1}$  is one period lagged value of residual from equation (19). The coefficient of this lagged error term indicates the speed of adjustment to wards the long run. It is expected to be negative and below zero. The variables and estimated coefficients of this ECM are shown in columns (3) and (4) of table 4.7 above.

In columns (3) and (4) of table 4.7 above, liberalization and world income have positive and significant impact on the growth of export in the short run. The coefficient of the lagged error term has the expected sign and magnitude. It means that about 38% of the gap between the actual and the long run equilibrium value of the rate of growth of export is corrected within a year.

Similarly, the robust IV (2SLS) estimate of the import equation at level indicates long run relationship between import and the right hand variables. The estimated coefficients are shown in columns (1) and (2) of table 4.8 below.

From column (2) of table 4.8 below, all the coefficients except for the dummy variable (d) have the expected sing. The coefficient for the trade liberalization variable is positive and significant at 5% level of significance. This is means the country has imported more items in the EPRDF regime (post liberalization periods) than what was observed in the DERG and IMPERIAL regimes (pre liberalization periods). Hence, the reduction of import tariffs and removal of quantity restrictions has resulted in more of imported items.

Moreover, the income elasticity of Ethiopian import is significant at 5% level of significance and is greater than unity. It implies majority of its import are capital goods, which are vital for the development efforts of the country. However, the model fails to proof the price elastic nature of Ethiopian imports.

**Table 4.8: Regression result of Import equation at level and difference**

Variable at Level (1)	Coefficients (2)	Variables at difference (3)	Coefficients (4)
Constant	17.48 ** (5.89)	Constant	0.07 (0.04)
$LP_{mt}$	0.26 (0.44)	$DLP_{mt}$	-0.20 ** (0.10)
$LGDP_t$	2.06 ** (0.92)	$DLGDP_t$	0.06 (0.06)
$Lib$	2.77 ** (0.77)	$Lib$	0.11 ** (0.05)
$LM_{t-1}$	1.14 ** (0.38)	$DLM_{t-1}$	-0.1 (-0.66)
D	0.26 * (0.14)	d	0.01 (0.10)
		$\mu_{2t-1}$	-0.04 (0.06)
No. obser.	47	No. obser.	45
$R^2$	0.94	$R^2$	0.27
F(6.40)	142.73 **	F(7.38)	2.59

Note: the values in the brackets below each coefficient are their standard errors. A coefficient with two stars (\*\*) implies significant at 5% level of significance and one star (\*) denotes significant only at 10% level of significance

Colum (4) of table 4.8 above shows the estimated coefficients for the ECM of import equation. This estimated model shows that only liberalization and price have positive and negative significant impact on the growth of Ethiopian imports at 5% level of significance, respectively. The sign and magnitude of the coefficient for the error-correcting variable is as what we expect but it is insignificant. It means that no significant adjustment is taking place within a year to narrow the gap between the long run equilibrium growth of import and its actual growth rate.

Comparing the coefficients of liberalization in tables 4.7 and 4.8 above, it seems that the impact of trade liberalization is more to imports than to exports. This is consistent with the descriptive analysis that shows the trade deficit of the country is worse in the post liberalization periods than pre-liberalization periods.

The long run and short run coefficients for GDP equation are estimated in the same way as we have done for export and import equations above. However, the high correlation among export, import and trade liberalization may affect the significance of their coefficients in the GDP equation. As a way out to improve their significance is to remove a variable among the highly correlated regressors in that equation. Table 4.9 shows estimation coefficients of GDP

equation by including and excluding some of the highly correlated variables. The values in columns 2, 3, 4, 5 and 6 of the table are the estimated coefficients of the model with all regressors, without import, without export, without trade liberalization and with out both export and import, respectively. While column 8 shows the estimation results of differenced regression equation with out including import.

Comparing the results of the table in relation to multicollinearity and significance of coefficients (excluding of the constant), the full regression (column2) resulted in only one variable (lagged GDP) significant at 5% level of significance and two variables (export and liberalization) significant at 10% level of significance. But as can be seen from column 3, the removal of import improves the number of significant variables at 5% level of significance but it makes trade liberalization insignificant at 10% level of significance

Table 4.9: Regression result of GDP equation at level and difference

Variable (1)	Full (2)	No M (3)	No X (4)	No lib (5)	No X&M (6)	Variable (7)	NO M (8)
Constant	4.7 ** (0.74)	4.80 ** (0.47)	5.4 ** (1.00)	5.10 ** (1.07)	4..7 ** (0.39)	Constant	- 0..02 (0.36)
$LX_t$	0.4 * (0.21)	0.38 ** (0.18)		0.34 (0.21)		$DLX_t$	4.15 ** (1.88)
$LM_t$	- 0.13 (0.31)		0.48 (0.44)	- 0.09 (0.44)		$DLGCAF$	1.33 * (0.69)
$LGCAF$	0.02 (0.18)	0.27 ** (0.13)	0.21 * (.11)	- 0.05 (0.31)	0.20 * (.02)	$DLLABOR$	0.86 (1.01)
$LLABOR$	0.06 (0.35)	0.02 (.02)	0.17 (0.51)	0.11 (0.36)	0.18 (0.30)	$LGDP_{t-1}$	- 0.06. (0.14)
$LGDP_{t-1}$	0.26 ** (0.02)	0.26 ** (0.03)	0.26 ** (0.03)	0.26 ** (.02)	0.26 ** (0.03)	Lib	- 0.51 (0.42)
Lib	- 0.20 * (0.12)	- 0.25 (0.24)	- 0.27 (0.04)		- 0.05 (0.08)	d	0.17 (0.31)
D	- 0.01 (0.06)	- 0.04 (0.04)	- 0.12 (0.09)	0.01 (0.08)	- 0.02 (0.04)	$\mu_{3t-1}$	- 0.48 ** (0.20)
No. obser.	47	47	47	47	47	No. obser.	45
R <sup>2</sup>	0.97	0.93	0.93	0.94	91.58	R <sup>2</sup>	0.35
F-value	237. **	142.73 **	173.2 **	254 **	150 **	F-value	8.36 **

Note: the values in the brackets below each coefficient are their standard errors. A coefficient with two stars (\*\*) implies significant at 5% level of significance and one star (\*) denotes significant only at 10% level of significance

However, the removal of export does not make improvement to the number of significant variables at 5% level of significance. Similar result is observed in columns 5 and 6. In the above columns, import is highly insignificant, but export is significant in most cases. This implies that even though both are highly correlated, export is better in explaining Ethiopian GDP than import. By taking in to account the role of export in explaining GDP and the

improvement in the number of significant variables when import is removed, GDP model regressed with out import is preferred in our analysis of the impact of trade liberalization on Ethiopian GDP.

As it is shown in column 3 of table 4.9 above, the estimated long run coefficients are all significant at 5% level of significance except for labour, liberalization and the dummy for drought and war. This estimation result indicates that trade liberalization has no direct significant impact on gross domestic product of the country .It is also insignificant in all the above columns at 10% level of significance except in the full regression with highly correlated regressors. However, exports and capital (investment) have positive and significant impact on the gross domestic product of the country. This implies that the higher growth rates of GDP and per capita GDP the country has achieved in the post liberalization periods may be explained by the higher growth of exports and investment in these periods.<sup>9</sup>

From column (8) of the table 4.9, the coefficient of the error correction variable is highly significant implying that the deviation of the actual growth rate from the long run equilibrium rate is adjusted fairly where 48% of the disequilibrium is removed each period. The coefficient for the liberalization variable is still insignificant at 10 % level of significance. However, growth of exports have direct and positive impact on the GDP growth of the country even in the short run.

In sum, our data does not provides strong evidence in support of direct link between trade liberalization and GDP growth of the country rather it provides an evidence in favour of an indirect effect through growth of exports and more investment projects.

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<sup>9</sup> See table 3.2.2

## 5. Conclusions

The analysis of the impact of trade liberalization on Ethiopian export, import and GDP has been done descriptively and econometrically. In both analyses annual time series data from 1960-2006 have been used in order to have clear insight on the economic performance of the country before and after the major trade reforms.

In the descriptive analysis part, we have seen that the country has been guided by different trade policies under the three regimes that have ruled the country. Both the DERG regime and the Imperial regimes were following import substitution trade policy with high tariff on imports (average 240 percent in both regimes). However, their development plan indicates that they have done some efforts to promote and diversify export sector. The imperial regime achieved higher growth of exports (11.03%, on average) and GDP (3.42%, on average) than the Derg regime with 3.2% growth of exports and 1.53% GDP growth on average. This is due to the higher export tax, relatively more overvalued currency and prolonged war in the DERG regime than the imperial regime

The EPRDF regime has come with massive trade policy change in 1992 in favour of trade liberalization. The regime changes the exchange rate policy from over valuation in pre-1992 to devaluation. The average tariff levels on luxury consumer goods were also reduced from over 230 percent in the late 1980s to 28.9 percent in 1995 (early phase of the reform process) to 17.5 percent in 2002. Moreover, on the export side it made a policy change that encourages exporters like dismantling of government monopoly in coffee trade and allowing exporters to retain part of their foreign exchange earning/proceeds.

As a result, the EPRDF regime achieved higher growth of exports (27.8%) and GDP (8.08%). However, the increased in export in the post trade liberalization is not enough to cover its imports bill. Rather the country's trade deficit is worse in this period than the periods under Derg and Imperial regimes. The country has remained with trade deficit for long period due the nature the products it exports and imports. It exports majority primary products with price and income inelastic products while it imports majority capital goods with price and income elastic products.

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To support the results of the descriptive analysis, export, import and GDP equations has been modelled and estimated using instrumental variable estimation. More over Error correction model has also been specified in order to show us the short run effects and speed of adjustment to wards the long run equilibrium. From the estimated long run coefficients, the effect of trade liberalization on both export and import is positive and significant. This is consistent with the descriptive analysis. However, the estimation result for GDP equation indicates that trade liberalization has no direct significant impact on gross domestic product of the country. The higher growth rates of GDP and per capita GDP the country has achieved in the post liberalization period may be explained by the higher growth of exports and investment in these periods. Our data provides an evidence of indirect effect of trade liberalization on GDP growth of the country through export growth and investment.

The policy implication from this study is that the country needs to diversify and transform its current export items in order to fully exploit the sector from the benefits of trade liberalization so that it can narrow the ever growing trade deficit of the country. Moreover, the currents government should be able to create suitable environment so that domestic and foreign investors will have confidence in their investment projects.



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